MONTHLY WEATHER REVIEW.

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INTRODUCTION.

The MONTHLY WEATHER REVIEW for August, 1902, is based on reports from about 3,100 stations furnished by employees and voluntary observers, classified as follows: Regular stations of the Weather Bureau, 160; West Indian service stations, 17; special river stations, 132; special rainfall stations, 48; voluntary observers of the Weather Bureau, 2,562; Army post hospital reports, 18; United States Life-Saving Service, 9; Southern Pacific Company, 96; Hawaiian Government Survey, 75; Canadian Meteorological Service, 33; Jamaica Weather Office, 130; Mexican Telegraph Service, 20; Mexican voluntary stations, 7; Mexican Telegraph Company, 3; Costa Rican Service, 7. International simultaneous observations are received from a few stations and used, together with trustworthy newspaper extracts and special reports.

Special acknowledgment is made of the hearty cooperation of Prof. R. F. Stupart, Director of the Meteorological Service of the Dominion of Canada; Mr. Curtis J. Lyons, Meteorologist to the Hawaiian Government Survey, Honolulu; Señor Manuel E. Pastrana, Director of the Central Meteorological and Magnetic Observatory of Mexico; Camilo A. Gonzales, Director-General of Mexican Telegraphs; Capt. S. I. Kimball, Superintendent of the United States Life-Saving Service; Lieut. Commander W. H. H. Southerland, Hydrographer, United States Navy; H. Pittier, Director of the Physico-Geographic Institute, San Jose, Costa Rica; Capt. François S. Chaves, Director of the Meteorological Observatory, Ponta Delgada, St. Michaels, Azores; W. M. Shaw, Esq., Secretary, Meteorological Office, London; and Rev. Josef Algué, S. J., Director, Philippine Weather Service.

Attention is called to the fact that the clocks and self-registers at regular Weather Bureau stations are all set to seventy-fifth meridian or eastern standard time, which is exactly five hours behind Greenwich time; as far as practicable, only this standard of time is used in the text of the REVIEW, since all Weather Bureau observations are required to be taken and recorded by it. The standards used by the public in the United States and Canada and by the voluntary observers are believed to conform generally to the modern international system of standard meridians, one hour apart, beginning with Greenwich. The Hawaiian standard meridian is 157° 30′, or $10^h\ 30^m$ west of Greenwich. The Costa Rican standard of time is that of San Jose, $0^h\ 36^m\ 13^s$ slower than seventy-fifth meridian time, corresponding to $5^h\ 36^m$ west of Greenwich. Records of miscellaneous phenomena that are reported occasionally in other standards of time by voluntary observers or newspaper correspondents are sometimes corrected to agree with the eastern standard; otherwise, the local standard is mentioned.

Barometric pressures, whether "station pressures" or "sea-level pressures," are now reduced to standard gravity, so that they express pressure in a standard system of absolute measures.

FORECASTS AND WARNINGS.

By Prof. E. B. GARRIOTT, in charge of Forecast Division.

In its general character the weather of August, 1902, corresponded with that of the preceding month. Moderate temperatures and frequent rains prevailed in the Northern States, and continued dry and warm weather in the middle and west Gulf States. West of the Rocky Mountains the first decade of the month was warm, the second decade cool, and after the 20th temperatures averaged about normal. In the Plateau and Pacific coast districts dry weather prevailed, except in New Mexico and Arizona, where frequent showers were reported. No severe general storms occurred on the coasts or the Great Lakes, nor in the West Indies.

Special warnings to vessels eastward bound from American ports were not required. On the 13th a disturbance of moderate strength moved eastward over Newfoundland, and during the succeeding forty-eight hours the barometer fell rapidly over the North Atlantic Ocean as far south as the Azores. On the morning of the 16th reports from the west coast of Ireland indicated the approach of a disturbance from the west. During the 17th and 18th this disturbance increased in intensity, and by the 19th had apparently crossed the British Isles to the North Sea. The severest disturbance of the month over the western Atlantic crossed Newfoundland from the southwest on the 17th, and apparently passed thence far to the north of the steamer routes. During the closing days of the month the barometer was low over the British Isles and western Europe.

BOSTON FORECAST DISTRICT.

No storm warnings were issued during the month and no storms or destructive winds passed over the district. The weather of the month was characteristic of the season and uneventful.—*J. W. Smith, Forecast Official.*

CHICAGO FORECAST DISTRICT.

In this district the month was not characterized by any unusual atmospheric disturbances, and no severe storms occurred on the upper lakes.—*H. J. Cox, Professor.*

NEW ORLEANS FORECAST DISTRICT.

No general storms occurred in this district during the month, and no special warnings were issued.—*I. M. Cline, Forecast Official.*

DENVER FORECAST DISTRICT.

No special warnings were issued during August.—*F. H. Brandenburg, Forecast Official.*

SAN FRANCISCO FORECAST DISTRICT.

The month was unmarked by any noteworthy disturbance.—*A. G. McAdie, Professor.*

PORTLAND, OREG., FORECAST DISTRICT.

The month was, as a whole, uneventful, and no storm warn-

ings were issued. Light frost occurred in eastern Oregon and in southwestern Idaho on the morning of the 29th. Warnings of this frost were issued on the morning of the 28th.—*E. A. Beals, Forecast Official.*

RIVERS AND FLOODS.

The rivers fell generally during August, the lowest stages for the month occurring almost uniformly during the last two or three days. There was, however, ample water for navigation except above Cincinnati, Ohio, where low stages caused a suspension after the 22d.

The crest of the Brazos River flood passed Booth, Tex., on the 8th, with a maximum stage of 38 feet, one foot below the danger line. This flood was described in the WEATHER REVIEW for July, 1902. There was no other high water except locally in the Wateree River in South Carolina on the 15th and 16th, where heavy showers caused a 20-foot rise that disappeared as rapidly as it came.

The highest and lowest water, mean stage, and monthly range at 142 river stations are given in Table VII. Hydrographs for typical points on seven principal rivers are shown on Chart V. The stations selected for charting are: Keokuk, St. Louis, Memphis, Vicksburg and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.—*H. C. Frankenfield, Forecast Official.*

AREAS OF HIGH AND LOW PRESSURE.

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocity.	
	Date.*	Lat. N.	Long. W.	Date.*	Lat. N.	Long. W.	Length.	Duration.	Daily.	Hourly.
High areas.		°	°		°	°	*Miles.*	*Days.*	*Miles.*	*Miles.*
I	1, p. m.	50	120	3, p. m.	47	87	1,600	2.0	800	33.3
II	4, a. m.	53	122	7, a. m.	37	98	2,050	3.0	683	28.4
III	9, a. m.	53	122	13, p. m.	39	75	2,900	4.5	644	26.8
IV	13, a. m.	50	100	17, a. m.	39	82	1,450	4.0	362	15.0
V	18, p. m.	48	125	25, a. m.	38	80	2,950	6.5	454	19.0
VI	25, a. m.	50	108	30, p. m.	37	75	2,700	5.5	491	20.4
Sums							13,650	25.5	3,434	142.9
Mean of 6 paths							2,275		572	23.8
Mean of 25.5 days									535	22.3
Low areas.										
I	1, a. m.	51	114	4, a. m.	43	71	2,400	3.0	800	33.3
II	2, p. m.	34	113	7, a. m.	48	68	3,050	4.5	678	28.2
III	6, a. m.	53	105	7, p. m.	49	86	1,000	1.5	667	27.8
IV	7, p. m.	54	114	12, p. m.	46	60	2,600	5.0	520	21.7
V	8, p. m.	44	103	10, a. m.	35	97	825	1.5	550	22.9
VI	10, p. m.	50	120	13, p. m.	38	105	2,250	3.0	750	31.3
VII	16, a. m.	41	112	18, a. m.	37	100	1,400	2.0	700	29.2
VIII	23, p. m.	51	114	25, p. m.	37	100	1,600	2.0	800	33.3
Sums							15,125	22.5	5,465	227.7
Mean of 8 paths							1,891		683	28.5
Mean of 22.5 days									672	28.0

*The "a. m." and "p. m." refer to the regular 8 a. m. and 8 p. m. weather maps.

For graphic presentation of the movements of these highs and lows see Charts I and II.—*Geo. E. Hunt, Chief Clerk Forecast Division.*

CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Divison.

The following summaries relating to the general weather and crop conditions during August are furnished by the directors of the respective sections of the Climate and Crop Service of the Weather Bureau:

Alabama.—The month, as a whole, was hot, dry, and generally unfavorable for all growing crops, though fairly good and beneficial rains fell during the first few days, and very general rains during the last few days relieved the long-protracted drought, the rainfall being excessive in a few places. Cotton deteriorated steadily and promises the poorest yield in years; corn promises a poor yield and minor crops poor to fair only.—*F. P. Chaffee.*

Arizona.—General rains occurred in the early part of the month and languishing vegetation was revived. The rains continued intermittently throughout the month, and the soil was well soaked in many localities. In sections where a total crop failure was apprehended a harvest will be made.—*William G. Burns.*

Arkansas.—At the close of the month cotton had deteriorated to such an extent that many correspondents estimated the yield at from half to two-thirds of a crop. Early corn made a good crop in central and southern portions of the State, but late corn was greatly injured by drought in the northern counties. There were many complaints of its drying up, and much of it was cut to save the fodder.—*E. B. Richards.*

California.—Temperature slightly below normal during the month retarded the ripening of grapes and late deciduous fruits to some extent. Field and forest fires caused considerable damage in the northern section. Grain harvest and haying were nearly completed at close of the month. Wheat, oats, barley, and hay yielded large crops. Deciduous fruits were above the average yield and a heavy crop of grapes was expected.—*Alexander G. McAdie.*

Colorado.—The rainfall was not only unevenly distributed, but it also came too late to effect a material improvement in the condition of those crops which were suffering from the protracted drought and scarcity of water. The ranges in the south-central sections, however, were revived by the copious precipitation of the last decade and gave promise of good fall pasturage at least. The conditions as regards moisture were less favorable in the northern counties, and as only a few of the very old ditches in the north-central section were supplied with water for irrigation, corn, potatoes, and other late crops continued to deteriorate. Harvesting and thrashing of grain crops were prosecuted under favorable conditions. In a few localities only was a third crop of alfalfa obtained. Fruit made normal advancement, and a large crop of good quality was marketed.—*F. H. Brandenburg.*

Florida.—High midday temperatures and ample sunshine stimulated the opening of cotton, which at the close of the month was from half to two-thirds open, and the crop was about half picked. The warm, frequent showers benefited cane and late cotton. The citrus fruit crop will be much reduced. The prospect for sweet potatoes is poor, dry weather causing a reduced acreage. Seeding for fall and winter gardens is backward.—*A. J. Mitchell.*

Georgia.—Drought conditions which prevailed at the close of July were intensified, and continued until about the close of the month, when general rains fell. Cotton suffered from rust and premature opening, and steadily deteriorated during the latter half of the month. The rains at the close of the month were too late to be of much benefit and badly discolored the staple. A short yield was in prospect, with little or no second growth visible.—*J. B. Marbury.*

Idaho.—While there were no storms of great severity during the month, the weather was showery in the northern counties from the 15th to 18th and in the southern sections from the 12th to 16th. The showers were followed by quite general frosts on the 18th and 19th, causing slight injury to tender vegetation. Light frosts occurred nightly in elevated sections from the 26th to the close of the month.—*S. M. Blandford.*

Illinois.—Rainy weather prevailed over most of the State during a large part of the month. In the middle and northern portions the rains caused considerable damage to grain in shock, but in the southern portion, where the weather had previously been rather dry and where thrashing was nearly completed, the rains were beneficial. The cool and wet weather of the month caused corn to mature very slowly, though a large crop of it was being made. In the southern district there was a decided improvement in the crop. During the latter part of the month corn matured more rapidly. Grasses, gardens, and potatoes did well during the month and at the end of the month pastures were in good condition. The apple prospects improved during August. The fruit dropped less than previously and there was considerable improvement in its quality.—*M. E. Blystone.*

Indiana.—With the exception of that in the north section and very late plantings in other places, the corn crop was unusually promising and much of it was cut and shocked. During the last half of August cutting corn, digging potatoes, cutting and thrashing clover, canning tomatoes, gathering pears, cutting tobacco, and plowing for fall seeding was in progress; potatoes were yielding an exceptionally heavy crop; fruit was of good quality, but ripened slowly; pears and grapes were good to fair; apple trees, with the exception of a comparatively few orchards, were bearing a very light crop of fruit; pastures were generally good—*W. T. Blythe.*